# PART XXIII Nephrology

## حلول نيلسون mcq

QAHTAN ALOBAIDY

د. ايمان نبيل محمد

طب عام ج/ الكوفة

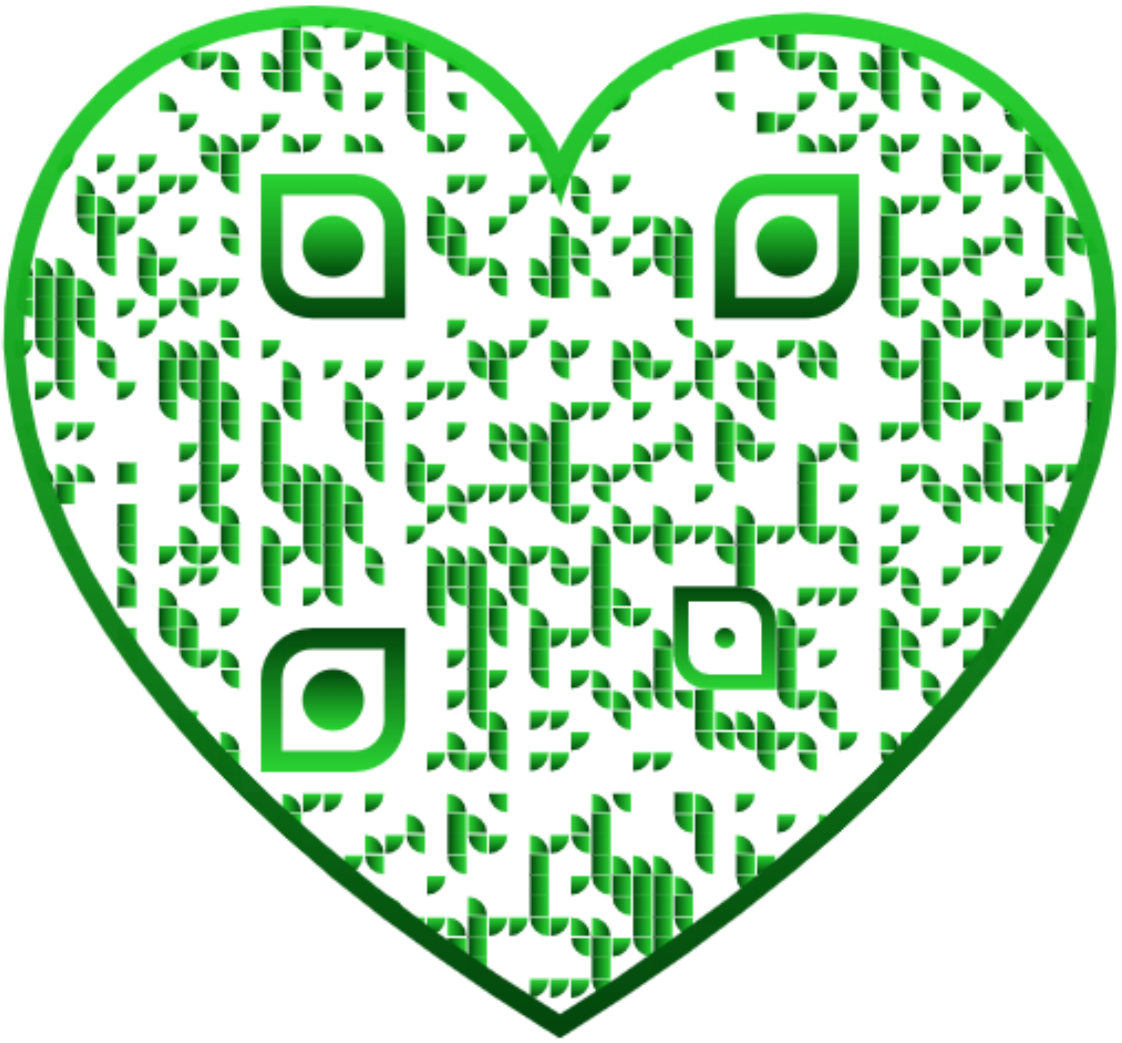
1. The part of the glomerulus which serves as a supporting and probably has a role in the regulation of glomerular blood flow, filtration, and removal of macromolecules is the
   A. glomerular basement membrane
   B. mesangium
   C. bowman's capsule
   D. parietal epithelial cell
   E. visceral epithelial

2. Collectively, the glomerular endothelial cell, basement membrane, and podocytes form the
   A. glomerulus
   B. filtration membrane
   C. juxtamedullary nephron
   D. nephron
   E. renal corpuscle

3. The ultra-filtrate which is filtered through the glomerular capillary walls contains all of the following **EXCEPT**
   A. electrolytes
   B. low-molecular-weight proteins
   C. creatinine
   D. albumin
   E. glucose

4. In contrast to the concentration of blood urea nitrogen, the serum creatinine level is primarily influenced by
   A. state of hydration
   B. nitrogen balance
   C. muscle mass
   D. hemorrhage
   E. vomiting

5. Mesangial cell disease include all the following **EXCEPT**
   A. IgA nephropathy
   B. membranous nephropathy



C. mesangioproliferative glomerulonephritis
D. diabetic nephropathy
E. class II lupus nephritis

6. Hematuria is defined as the presence of at least 5 red blood cells per microliter of urine, false-positive results may be seen in urinary dipstick reading in all the following **EXCEPT**

A. an alkaline urine (pH > 8)
B. contamination with hydrogen peroxide
C. presence of formalin
D. hemoglobinuria
E. myoglobinuria

7. Rhabdomyolysis is always clinically significant as it may lead to acute renal injury, it can occurs secondary to

A. severe electrolyte abnormalities
B. bacterial endocarditis
C. transfusion reactions
D. mycoplasma infection
E. autoimmune hemolytic anemia

8. Glomerular hematuria is associated with

A. urinary microscopic findings of RBC casts
B. minimal proteinuria on dipstick (<100 mg/dL)
C. gross hematuria that is bright red or pink
D. the presence of leukocytes cast
E. normal urinary RBC morphology

9. In hematuria, renal biopsy is indicated in all the following **EXCEPT**

A. some children with persistent microscopic hematuria
B. decreased renal function
C. proteinuria
D. hypertension
E. persistent high serum complement C3

10. IgA nephropathy is characterized by

A. hematuria occur after skin infection
B. proteinuria is often >1000 mg/24 hr
C. severe hypertension
D. normal serum levels of C3
E. serum IgA levels have a diagnostic value

11. A 5-year-old male presented with dark color urine 1 to 2 days after an upper respiratory tract infection, GUE: RBC +++, albumin +; blood urea: 25 mg/dl; serum creatine: 0.6 mg/dl; with normal serum complement. Poor prognostic indicators at follow-up include all of the following **EXCEPT**

A. persistent hypertension
B. diminished renal function
C. significant proteinuria
D. histologically diffuse mesangial proliferation
E. recurrent macroscopic hematuria

12. The primary treatment of IgA nephropathy is appropriate blood pressure control and management of significant proteinuria. Regarding the treatment, which of the following is **TRUE**?

A. ACEI are ineffective in reducing proteinuria
B. corticosteroids not improve renal function
C. tonsillectomy is currently recommended
D. successful kidney transplantation
E. cyclophosphamide is effective in improving renal function

13. Alport Syndrome AS, is a genetically heterogeneous disease caused by mutations in the genes coding for type IV collagen, it is characterized by

A. asymptomatic microscopic hematuria
B. proteinuria<1 g/24 hr.
C. congenital sensor neural hearing loss
D. ocular abnormalities in 80% of X-linked type
E. leiomyomatosis of the esophagus is common

14. Which of the following is pathognomonic in diagnosis of X-linked type of hereditary nephritis?

A. gross hematuria
B. discontinuous epidermal basement membrane staining
C. platelet abnormalities
D. hearing loss
E. macular flecks

15. Thin basement membrane disease TBMD is defined by the presence of persistent microscopic hematuria and isolated thinning of the GBM on electron microscopy, all the following are true **EXCEPT**

A. significant proteinuria is rare
B. episodic gross hematuria can be present
C. may be transmitted as an autosomal dominant trait
D. heterozygous mutations in the COL4A4 genes

E. renal insufficiency is common

16. The best single test to document cutaneous streptococcal infection is
A. low serum C3 level
B. elevated antistreptolysin O titer
C. positive streptozyme screen
D. antideoxyribonuclease B level
E. depressed serum CH50

17. A 10-year-old male (had a boil in the left thigh and mild fever one month ago) presented with headache, malaise, lethargy, lion pain, decreased urine output, and puffiness of the face; GUE: RBC cast ++, albumin ++; low C3 level and normal C4 level.
Which of the following is **TRUE** about his disease?
A. acute nephritic syndrome 40%
B. nephrotic syndrome 50%
C. acute renal failure 90%
D. ↑ ASO titers 70%
E. hypertension 70%

18. Renal biopsy in acute post streptococcal glomerulonephritis should be considered in all the following **EXCEPT**
A. acute renal failure
B. nephrotic syndrome
C. absence of evidence of streptococcal infection
D. low C3 level in the first 2 months
E. initially normal complement levels

19. Acute post- infectious glomerulonephritis is one of the most common glomerular causes of gross hematuria in children.
Of the following, the **TRUE** statement is
A. can follow fungal infection
B. early systemic antibiotic, eliminate the risk of glomerulonephritis
C. all family members of patient need antibiotic treatment
D. antibiotic affect the natural history of the disease
E. recurrences are common

20. The **MOST** common etiology of secondary membranous nephropathy (MN) in children is
A. neuroblastoma
B. measles
C. systemic lupus erythematosis
D. chronic hepatitis C

E. penicillin

21. The well-known complication of membranous nephropathy is
A. renal vein thrombosis
B. hypertension 2%
C. hematuria acute renal failure
D. gross hematuria
E. nephritic syndrome

22. Type I membranoproliferative glomerulonephritis is
A. less common than type II membranoproliferative glomerulonephritis
B. not to be mediated by immune complexes
C. associated with partial lipodystrophy
D. called dense deposit disease
E. characterized by low C3 complement level

A. 23. Renal involvement in childhood systemic lupus erythematosis (SLE) is present in
A. 100% of patients
B. 80% of patients
C. 60%of patients
D. 40% of patients
E. 20% of patients

24. WHO classification of lupus nephritis is based on a combination of features including light microscopy, immunofluorescence, and electron microscopy.
Of the following, the **WORST** outcome is associated with
A. class I nephritis
B. class II nephritis
C. class III nephritis
D. class IV nephritis
E. class V nephritis

25. In treatment of lupus nephritis, plasmapheresis is effective in
A. all patients
B. classes III and IV
C. maintenance therapy
D. reducing proteinuria
E. accompanying thrombotic thrombocytopenic purpura

26. Henoch-Schönlein purpura is the most common small vessel vasculitis in childhood, aggressive therapy may be reasonable in those with

A. isolated microscopic hematuria
B. insignificant proteinuria
C. severe systemic manifestations
D. >50% crescents on renal biopsy
E. IgA deposits intensity

27. “Rapidly progressive” RPGN describes the clinical course of several forms of glomerulonephritis whose unifying feature is the histopathologic finding of crescents in the majority of glomeruli. Plasmapheresis has been reported to be of benefit in patients with

A. post infectious glomerulonephritis
B. immunoglobulin A nephropathy
C. Henoch-Schönleinpurpura
D. Good pasture disease
E. endocarditis

28. AII the following diseases can cause a pulmonary-renal syndrome **EXCEPT**

B. systemic lupus erythematosis
C. Henoch-Schönlein purpura
D. microscopic polyangiitis
E. granulomatosis with polyangiitis
F. IgA nephropathy

29. Hemolytic-uremic syndrome is a common cause of community acquired acute kidney injury in young children; atypical type may be triggered by

A. toxin-producing E-coli
B. raw milk
C. Streptococcus pneumoniae
D. shiga toxin
E. cyclosporine

30. In hemolytic-uremic syndrome, thrombotic microangiopathies are associated with aII the following **EXCEPT**

A. genetically determined factor H deficiency
B. neuraminidase-producing Streptococcus pneumonia infection
C. systemic lupus erythematosis
D. malignancy
E. hypotension

31. In hemolytic-uremic syndrome (HUS). Of the following, the **MOST**correct statement is

A. majority of patients of diarrhea-associated enteropathictype develops HUS

B. stool culture is often positive in patients who have diarrhea-associated HUS
C. kidney biopsy is rarely indicated to diagnose HUS
D. partial thromboplastin and prothrombin times are usually low
E. Coombs test is usually negative in in pneumococci-induced HUS

32. In the treatment of diarrhea-associated hemolytic-uremic syndrome.
One of the following options has no beneficial role
A. dialysis
B. early intravenous volume expansion
C. control of hypertension
D. eculizumab
E. red cell transfusions

33. All the following matching are true **EXCEPT**
A. nephrotic syndrome---Penicillin
B. nephrogenic diabetes inspidus ---cisplatin
C. nephrolithiasis ---furosemide
D. renal tubular acidosis---lithium
E. interstitial nephritis---cimetidine

34. Renal cortical necrosis is a rare cause of acute renal failure occurring secondary to extensive ischemic damage of the renal cortex.
Of the following, the **LEAST** common cause is
A. perinatal asphyxia
B. severe congenital heart disease
C. severe hemolytic-uremic syndrome
D. amniotic fluid embolism
E. infectious endocarditis

35. All the following causes hematuria associated with rapid development of microangiopathic hemolytic anemia or enlargement of the kidney(s) **EXCEPT**
A. nephrotic syndrome
B. renal vein thrombosis
C. polycystic kidney disease
D. Wilms tumor
E. hemolytic-uremic syndrome

36. Hypercalciuria can be seen in
A. hypoparathyroidism
B. corticosteroid therapy
C. vitamin D deficiency
D. oral thiazide diuretics therapy

E. Addison`s disease

37. Clinical manifestations of sickle cell nephropathy SSN include all the following **EXCEPT**

A. hematuria
B. polyuria
C. hemolytic-uremic syndrome
D. renal tubular acidosis
E. nephrotic-range proteinuria

38. Autosomal dominant polycystic kidney disease is the most common hereditary human kidney disease, all the following are true **EXCEPT**

A. gross or microscopic hematuria
B. may be seen in neonates
C. abnormal renal sonography in the absence of symptoms
D. is a multiorgan disorder
E. right sided valvular heart disease

39. Hemorrhagic cystitis can occur in response to all the following **EXCEPT**

A. cyclophosphamide
B. adenovirus infection
C. cyclosporine
D. polyoma BK virus infection
E. amyloidosis

40. All the following are treatment options of hemorrhagic cystitis **EXCEPT**

A. antibiotic
B. intensive intravenous hydration
C. forced dieresis
D. analgesia
E. spasmolytic drugs

41. In exercise hematuria; one of the following is **TRUE**

A. A blood clots rarely seen in urine
B. no dysuria
C. abnormal findings on cystoscopy
D. resolution after 7 days
E. less common in males

42. False-ngative results in urine dipstick measurement of protein can occur in

A. very high urine pH (>7.0)
B. large volume of urine output

C. contamination of the urine with blood
D. highly concentrated urine specimen
E. contamination of the urine with antiseptic

43. Which of the following methods offer more precise information regarding urine protein excretion?
A. frothy urine
B. dipstick testing
C. micro albuminuria
D. spot urine for protein/creatinine ratio
E. 24 hr. urine for protein and creatinine excretion

44. Transient proteinuria can be seen in all the following **EXCEPT**
A. temperature >38.3°C
B. exercise
C. over hydration
D. cold exposure
E. seizures

45. Orthostatic proteinuria is increased amounts of protein in the upright position. Of the following, the **MOST** appropriate answer is
A. usually symptomatic
B. hematuria may be present
C. renal dysfunction are absent
D. the cause is well-known
E. edema usually positive

46. All the following are secondary causes of nephrotic syndrome **EXCEPT**
A. measles
B. malaria
C. syphilis
D. toxoplasmosis
E. schistosomiasis

47. Children with nephrotic syndrome are especially susceptible to infections such as cellulitis, spontaneous bacterial peritonitis, and bacteremia, all the following are contributory factors **EXCEPT**
A. urinary losses of immunoglobulin G
B. urinary loss of complement factors
C. impaired opsonization of microorganisms
D. immunosuppressive therapy
E. urinary losses of immunoglobulin A

48. Nephrotic syndrome is a hypercoagulable state resulting from
A. hemodilution
B. decreased platelet number
C. changes in coagulation factor levels
D. decrease in hepatic production of fibrinogen
E. high level of antithrombin III

49. When you investigate for first attack of minimal change nephrotic syndrome (MCNS), one of the following is **TRUE**
A. microscopic hematuria is present in 20% of children
B. spot urine protein : creatinine ratio should be <2.0
C. serum complement levels are low
D. renal biopsy is routinely performed
E. 2+ proteinuria

50. In treatment of minimal change nephrotic syndrome, all the following are true **EXCEPT**
A. tuberculosis must be ruled out prior to starting immunosuppressive therapy
B. steroid therapy may be initiated without a diagnostic renal biopsy
C. prednisone should be administered as a single daily dose of 60 mg/m2/day
D. remission consists of a urine<1+ protein on urine dipstick for3 consecutive days
E. pleural effusion, is a potential complication of parenteral albumin therapy

51. Steroid resistance nephrotic syndrome is defined as failure to achieve remission after
A. 4wk of corticosteroid therapy
B. 6 wk. of corticosteroid therapy
C. 8 wk. of corticosteroid therapy
D. 10 wk. of corticosteroid therapy
E. 12 wk. of corticosteroid therapy

52. To reduce the risk of serious infections in children with nephrotic syndrome, all the following immunizations can be used **EXCEPT**
A. pneumococcal 13-valent conjugant vaccine
B. influenza vaccine annually to the child
C. pneumococcal 23-valent polysaccharide vaccine
D. varicella-zoster vaccine
E. influenza vaccination annually to their household contacts

53. After achievement of remission in children with nephrotic syndrome, they should
A. restrict their activities
B. restrict sodium intake

C. be considered chronically ill
D. maintain an unrestricted diet
E. decrease water/fluid intake

54. Congenital nephrotic syndrome is defined as nephrotic syndrome manifesting at birth or within the 1st 3 mo of life,
The etiologies include all the following **EXCEPT**
A. syphilis
B. herpes infection
C. mercury exposure
D. mutations in the NPHS1
E. infantile systemic lupus erythematosis

55. The definitive treatment of primary congenital nephrotic syndrome is
A. angiotensin-converting enzyme inhibitors
B. prostaglandin synthesis inhibitors
C. aggressive nutritional support
D. bilateral nephrectomies
E. renal transplantation

56. All the following matching are true **EXCEPT**
A. proximal RTA----trimethoprim
B. distal RTA----amphotericin B
C. hyperkalemic RTA----cyclosporine
D. distal RTA----lithium
E. proximal RTA----gentamicin

57. Cystinosis is a systemic disease caused by a defect in the metabolism of cysteine that results in accumulation of cystine crystals in most of the major organs of the body. All the following are recognized features **EXCEPT**
A. renal insufficiency
B. rickets
C. hypothyroidism
D. glaucoma
E. fever

58. Treatment of cystinosis is directed at correcting the metabolic abnormalities associated with Fanconi syndrome or chronic renal failure, and the use of
A. cystine eye drops
B. oral cysteine
C. prostaglandin synthesis inhibitor
D. growth hormone

E. angiotensin-converting enzyme inhibitors

59. Urinalysis in patients with Fanconi syndrome may show all the following **EXCEPT**
A. urine pH is alkaline
B. glycosuria
C. uricosuria
D. phosphaturia
E. elevated urinary sodium

60. Distal RTA can be presented with
A. hypocalciuria
B. hypercitraturia
C. phosphaturia
D. conductive deafness
E. growth failure

61. Medullary sponge kidney is a relatively rare sporadic disorder in children. It is characterized by
A. cystic dilation of the proximal tubule
B. nephrolithiasis
C. proximal renal tubular acidosis
D. concentrated urine
E. cortical nephrocalcinosis

62. Pathogenesis of hyperkalemic (Type IV) renal tubular acidosis is due to
A. hyperaldosteronism
B. inhibiting ammonia genesis
C. pseudohyperaldosteronism
D. massive bicarbonate wasting
E. all of the above

63. Urinary indices in patients with type IV RTA include all the following **EXCEPT**
A. may be alkaline or acidic
B. elevated sodium level
C. inappropriately low potassium level
D. foul-smell
E. aminoaciduria

64. Nephrogenic diabetes inspidus is a disorder of water metabolism characterized by an inability to concentrate urine, even in the presence of antidiuretic hormone.
Of the following, the **MOST** correct statement is
A. most common inheritance is autosomal dominant

B. can be caused by hypokalemia
C. mutations in the AQP2 gene in X-linked form
D. irritability and crying are uncommon features
E. secondary form present with hyponatremia

65. All the following are options in the treatment of nephrogenic diabetes insipidus **EXCEPT**
A. free access to water
B. furosemide
C. hydrochlorothiazide
D. amiloride
E. indomethacin

66. Bartter syndrome is a group of disorders characterized by hypokalemic metabolic alkalosis with hypercalciuria and salt wasting.
It can be presented with all of the following **EXCEPT**
A. maternal polyhydramnios
B. severe episodes of recurrent dehydration
C. failure to thrive in classic Bartter syndrome
D. deafness is associated with antenatal Bartter syndrome
E. hypertension due to hyperaldosteronism

67. The diagnosis of Bartter syndrome typically include
A. markedly low serum rennin
B. high urinary calcium levels
C. nephrocalcinosis
D. hypomagnesaemia
E. renal biopsy

68. All the following are options in the treatment of Bartter syndrome **EXCEPT**
A. potassium supplementation
B. aldosterone antagonist
C. high-sodium diet
D. Indomethacin
E. kidney transplantation

69. Gitelman syndrome is a rare cause of autosomal recessive hypokalemic metabolic alkalosis, the distinctive feature is
A. Hypercalciuria
B. hypermagnesuria
C. hypernatremia
D. low aldosterone levels

E. elevated prostaglandin E secretion

70. The juvenile nephronophthisis JN is a group of inherited genetically determined cystic renal diseases, it can be presented with all the following **EXCEPT**

A. oliguria
B. unexplained anemia
C. growth failure
D. chronic renal failure
E. retinal degeneration

71. Acute kidney injury AKI is a clinical syndrome in which a sudden deterioration in renal function results in the inability of the kidneys to maintain fluid and electrolyte homeostasis.
Of the following, the **MOST** correct matching is

A. low urine sodium (UNa< 20 mEq/L) : intrinsic AKI
B. fractional excretion of sodium >2% : prerenal AKI
C. elevated urine osmolality (UOsm>500 mOsm/kg) : post renal AKI
D. specific gravity of <1.010 : intrinsic AKI
E. red blood cell casts :prerenal AKI

72. Medical management of acute kidney injury include all the following **EXCEPT**

A. bladder catheter should be placed immediately
B. intravenous administration of boluses isotonic saline
C. furosemide may be administered as a single IV dose
D. fluid restriction is essential if there is no response to a diuretic challenge
E. mannitol is not effective in prevention of pigment induced renal failure

73. Hyperkalemia can lead to cardiac arrhythmia, cardiac arrest, and death. Serum potassium can be lowered by all the following **EXCEPT**

A. regular insulin with glucose
B. calcium gluconate
C. sodium bicarbonate
D. Kayexalate
E. Dialysis

74. Treatment of hypocalcemia in acute kidney injury include all the following **EXCEPT**

A. low-phosphorus diet
B. intra venous phosphate binders
C. calcium should not be given intravenously
D. sevelamer
E. avoid aluminum-based binders

75. Indications for dialysis in acute kidney injury include all the following **EXCEPT**

A. anuria/oliguria
B. persistent hypercalcemia
C. severe metabolic acidosis
D. volume overload
E. blood urea nitrogen >100-150 mg/dl

76. Many patients with acute kidney injury require dialysis support for1-3 wk, which of the following is **TRUE** statement

A. Intermittent hemodialysis is useful in patients with unstable hemodynamic status
B. continuous renal replacement therapy is useful in patients with stable hemodynamic status
C. in peritoneal dialysis ,hypo-osmolar dialysate is infused into the peritoneal cavity
D. anticoagulation is not necessary in peritoneal dialysis
E. urea and creatinine clearance more with peritoneal dialysis than intermittent hemodialysis

77. Chronic kidney disease in children <5-yr-old is **MOST** commonly a result of

A. lupus nephritis
B. familial juvenile nephronophthisis
C. Alport syndrome
D. focal segmental glomerulosclerosis
E. autosomal dominant polycystic kidney disease

78. Pathogenesis of chronic kidney disease (CKD) include all the following **EXCEPT**

A. hyperfiltration injury
B. hyperkalemia
C. proteinuria
D. hypertension
E. hyperphosphatemia

79. End-stage renal disease (ESRD) represents the state in which a patient's renal dysfunction has progressed to the point at which homeostasis and survival can no longer be sustained with native kidney function and maximal medical management.
Of the following, the **TRUE** statement is

A. the ultimate goal for children is dialysis
B. renal replacement therapy be initiated at stage 5 CKD
C. the time to actually initiate dialysis include impaired school performance
D. peritoneal dialysis is performed 3 times weekly
E. peritoneal dialysis use cycler-driven therapy increases the risk of peritonitis

80. Kidney transplantation is the optimal therapy for children with end-stage renal disease, all the following are true **EXCEPT**

A. relative contraindication is preexisting metastatic malignancy
B. successful transplantation leads to improvement in their linear growth
C. preemptive transplantation mean transplantation without prior dialysis
D. optimal outcomes result when the child weighs >15 kg
E. urologic problems should be addressed before surgery

81. Recurrent disease in the renal graft occur in all cases of

A. focal segmental glomerulosclerosis
B. primary oxalosis
C. membranoproliferative glomerulonephritis type II
D. IgA nephropathy
E. congenital nephrotic syndrome

82. Indications for bilateral native nephrectomies before renal transplantation include

A. Denys-Drash syndrome
B. IgA nephropathy
C. chronic glomerulonephritis
D. Prune belly syndrome
E. medullary cystic disease

83. Before renal transplantation, hemoglobin levels should be maintain at the level between

A. 7 and 8 g/dL
B. 9and 10 g/dL
C. 11 and 12 g/dL
D. 13 and 14 g/dL
E. 15 and 16 g/dL

84. Risk factor for renal graft thrombosis include

A. prior history of peritoneal dialysis
B. arterial hypertension
C. donor age (>2 yr.)
D. recipient age (>5 yr.)
E. cold ischemia time <24 hr.

85. Infections need to be identified and treated before renal transplantation. Infectious disease screening includes all the following **EXCEPT**

A. tuberculosis skin test
B. cytomegalovirus IgG
C. measles antibody

D. hepatitis A serology
E. varicella titer

86. Antithymocyte globulin and thymoglobulin act against
A. interleukin-2 Receptor Antibodies
B. T-lymphocyte antigens
C. B cells
D. CD20 epitope
E. mammalian target of rapamycin

87. Of the following, the **BEST** choice for maintenance immunosuppression in renal transplantation is
A. cyclosporin
B. basiliximab
C. daclizumab
D. rituximab
E. belatacept

88. The side-effect profile of cyclosporine in children include all the following **EXCEPT**
A. hypertrichosis
B. gingival hyperplasia
C. neutropenia
D. coarsening facial features
E. hyperlipidemia

89. Corticosteroids remain an integral part of many immunosuppressive protocols despite their multifaceted toxicities. In children, the **MOST** noteworthy side effect is
A. obesity
B. hypertension
C. aseptic necrosis of bone
D. retarded skeletal growth
E. cushingoid faces

90. Polyomavirus nephropathy is an important cause of allograft dysfunction; the increased incidence is thought to be the result of
A. reduction in immunosuppression doses
B. more potent immunosuppressive regimens
C. cidofovir use
D. leflunomide use
E. ciprofloxacin therapy

91. The following formulas are true **EXCEPT**

A. sodium requirement= 0.6 ×weight in kg ×(125− serum sodium in mEq/L)
B. blood anion gap=[Na] − [Cl +HCO3]
C. blood anion gap=[Na − Cl -HCO3]
D. urine anion gap ([urine Na + urine K+] − urine Cl−)
E. estimated GFR = 0.43 × height in m/serum creatinine in mg/dL

**د. ايمان نبيل محمد**
**طب عام ج/ الكوفة**

# PART XXIII Nephrology ANSWERS

## QAHTAN ALOBAIDY

1.**(B).**
2.**(B).**
3.**(D).** The ultra-filtrate, which is cell free, contains all of the substances in plasma (electrolytes, glucose, phosphate, urea, creatinine, peptides, and low-molecular-weight proteins except proteins having a molecular weight of ≥68 kDa [such as albumin and globulins]).
4.**(C).** Creatinine is affected by sex, height, muscle mass, bilirubin, and red blood cell hemolysis, while the concentration of blood urea nitrogen is affected by state of hydration and nitrogen balance.
5.**(B).** Membranous nephropathy result from epithelial cell injury, epithelial cells, in conjunction with basement membrane, allow filtration of plasma solutes but retard passage of cells and plasma proteins. Disease related to these cells is typified by the presence of sub epithelial deposits and flattening of the foot processes that engage the basement membrane, resulting in disruption of the filtration barrier and proteinuria.
6.**(C).** False negative results can occur in the presence of formalin (used as a urine preservative) or high urinary concentrations of ascorbic acid (i.e., in patients with vitamin C intake >2000 mg/day).
7.**(A).** Rhabdomyolysis can occurs secondary to viral myositis, crush injury, severe electrolyte abnormalities (hypernatremia, hypophosphatemia), hypotension, disseminated intravascular coagulation, toxins (drugs, venom), metabolic disorders of muscles, and prolonged seizures. While other distractors are causesof hemolysis and hemoglobinuria.
8.**(A).** Hematuria from within the glomerulus is often associated with urinary microscopic findings of RBC casts, and deformed urinary RBCs (particularly acanthocytes), brown, cola- or tea-colored, or burgundy urine, and proteinuria >100 mg/dLvia dipstick. Hematuria originating within the tubular system may be associated with the presence of leukocytes or renal tubular casts. Lower urinary tract sources of hematuria may be associated with gross hematuria that is bright red or pink, terminal hematuria (gross hematuria occurring at the end of the urine stream), blood clots, normal urinary RBC morphology, and minimal proteinuria on dipstick (<100 mg/dL).
9.**(E).** Renal biopsy is indicated for children with persistent low serum complement C3.
10.**(D).** Gross hematuria often occurs within 1-2 days of onset of an upper respiratory or gastrointestinal infection, in contrast to the longer latency period observed in acute post infectious glomerulonephritis, and may be associated with loin pain. Proteinuria is often <1000 mg/24 hr in patients with asymptomatic microscopic hematuria. Mild to moderate hypertension is most often seen in patients with nephritic or nephrotic

syndrome, but is rarely severe enough to result in hypertensive emergencies. Normal serum levels of C3 in IgA nephropathy help to distinguish this disorder from post streptococcal glomerulonephritis. Serum IgA levels have no diagnostic value because they are elevated in only 15% of pediatric patients.

11.**(E).** Recurrent macroscopic hematuria is a good prognostic indicator.

12.**(D).** Angiotensin-converting enzyme inhibitors and angiotensin II receptor antagonists are effective in reducing proteinuria and retarding the rate of disease progression when used individually or in combination. Corticosteroids reduce proteinuria and improve renal function in those patients with a glomerular filtration rate>60 mL/min/m2.To date, additional immunosuppression with cyclophosphamide or azathioprine has not appeared to be effective, but further randomized clinical trials are in progress. Tonsillectomy has been used as treatment for IgA nephropathy in many countries including Japan. Performing a tonsillectomy in the absence of significant tonsillitis in association with IgA nephropathy is currently not recommended until appropriate prospective, controlled trials have been performed and demonstrate efficacy. Patients with IgA nephropathy may undergo successful kidney transplantation. Although recurrent disease is frequent, allograft loss caused by IgA nephropathy occurs in only 15-30% of patients.

13.**(A).** All patients with AS have asymptomatic microscopic hematuria, which may be intermittent in girls and younger boys. Progressive proteinuria, often exceeding 1 g/24 hr., is common by the 2nd decade of life and can be severe enough to cause nephrotic syndrome. Bilateral sensor neural hearing loss, which is never congenital, Ocular abnormalities, which occur in 30-40% of patients with X-linked AS, include anterior lentic onus (extrusion of the central portion of the lens into the anterior chamber), macular flecks, and corneal erosions. Leiomyomatosis of the esophagus, tracheobronchial tree, and female genitals in association with platelet abnormalities has been reported, but is rare.

14.**(B).** Absence of epidermal basement membrane staining for the α5 chain of type IV collagen in male hemi zygotes and discontinuous epidermal basement membrane staining in female heterozygotes on skin biopsy is pathognomonic for X-linked AS and can preclude diagnostic renal biopsy.

15.**(E).** Rare cases of TBMD progress, and such patients develop significant proteinuria, hypertension, or renal insufficiency.[ heterozygous mutations in the COL4A3 and COL4Agenes, which encode the α3 and α4 chains of type IV collagen present in the GBM, result in TBMD while homozygous mutations in these same genes result in Autosomal recessive Alport syndrome].

16.**(D).** Four differences in APSGN follow throat or skin infections:

Post streptococcal GN commonly follows streptococcal pharyngitis during cold-weather months and streptococcal skin infections or pyoderma during warm-weather months.

Epidemics of nephritis have been described in association with throat (serotypes M1, M4, M25, and some strains of M12) and skin (serotype M49) infections.

The typical patient develops an acute nephritic syndrome 1-2 wk. after an antecedent streptococcal pharyngitis or 3-6 wk. after a streptococcal pyoderma.
The antistreptolysin O titer is commonly elevated after a pharyngeal infection but rarely increases after streptococcal skin infections.
17.**(E).** Acute nephritic syndrome 90%, nephrotic syndrome 10-20%, acute renal failure 50%, the antistreptolysin O titer is commonly elevated after a pharyngeal infection but rarely increases after streptococcal skin infections, hypertension 70%.
18.**(D).** Renal biopsy is considered when hematuria and proteinuria, diminished renal function, and/or a low C3 level persist more than 2 mo. after onset.
19.**(A).** Acute GN can occur after certain fungal, rickettsial, protozoan, parasitic, or viral diseases (influenza and parvovirus) thatis why the terms APSGN and acute post infectious GN are used synonymously. Early systemic antibiotic therapy for streptococcal throat and skin infections does not eliminate the risk of GN. Family members of patients with acute GN, especially young children, should be considered at risk and be cultured for group A β-hemolytic streptococci and treated if positive. Family pets, particularly dogs, have also been reported as carriers. A 10 day course of systemic antibiotic therapy with penicillin is recommended to limit the spread of the nephritogenic organisms, antibiotic therapy does not affect the natural history of APSGN, and recurrences are extremely rare.
20.**(C).** MN also associated with chronic hepatitis B infection and congenital syphilis, other chronic infections, including malaria, which is likely the most common cause of nephrotic syndrome worldwide. Certainmedications, such as penicillamine and gold, or chronic factor replacement in patients with hemophilia. Rare causes such as neuroblastoma, or other idiopathic systemic diseases.
21.**(A).** A subset of patients with MN present with a major venous thrombosis, commonly renal vein thrombosis, this well-known complication. Approximately 20% of children have hypertension at presentation, most patients also have microscopic hematuria and only rarely present with gross hematuria. MN is most common in the 2nd decade of life, but it can occur at any age, including infancy.The disease usually manifests as nephrotic syndrome and accounts for 2-6% of all cases of childhood nephrotic syndrome.
22.**(E).** Type II MPGN (dense deposit disease) is less common than type I membranoproliferative glomerulonephritis, not to be mediated by immune complexes, demonstrate an associated systemic disease called partial lipodystrophy, serum C3 complement levels are low in the majority of cases(while in membranous nephropathy is normal), Patients present in equal proportions with nephrotic syndrome, acute nephritic syndrome, or persistent asymptomatic microscopic hematuria and proteinuria (while in membranous nephropathy usually manifest as nephrotic syndrome).
23.**(B).** Renal disease in childhood SLE is present in up to 80% of patients while approximately 50% of patients with HSP develop renal manifestations

24.**(D).** Renal biopsy should be performed in all patients with SLE because histopathologic findings are used to determine the selection of specific immunosuppressive therapies.
25.**(E).** Plasmapheresis is ineffective in lupus nephritis unless there is accompanying thrombotic thrombocytopenic purpura or antineutrophilic cytoplasmic antibody associated disease.
26.**(D).** Spontaneous and complete resolution of the nephritis typically occurs in the majority of patients with mild initial manifestations (isolated hematuria with insignificant proteinuria), and the severity of the systemic manifestations does not correlate with the severity of the nephritis.
27.**(D).** Plasmapheresis may also benefit patients with ANCA-associated crescentic GN, in particular those with the most severe renal dysfunction at presentation. The possible benefits of plasmapheresis in other forms of RPGN are unclear.
28.**(E).**
29.**(E).**
30.**(E).** Malignant hypertension.
31.**(C).** Kidney biopsies are only rarely performed in HUS because the diagnosis is usually established by clinical criteria and the risks of biopsy are significant during the active phase of the disease. The organisms that cause HUS may be rapidly cleared, therefore, the stool culture is often negative in patients who have diarrhea-associated HUS, Partial thromboplastin and prothrombin times are usually normal, the Coombs test is negative, with the exception of pneumococci-induced HUS, where the Coombs test is usually positive.
32.**(D).** Eculizumab is an anti-C5 antibody that inhibits complement activation, a pathway that contributes to active disease in some forms of atypical familial HUS, Eculizumab is FDA approved for the treatment of atypical HUS, while initial reports suggested that eculizumab provided benefit in patients with diarrhea associated HUS, subsequent systematic analysis showed no benefit from either plasma exchange or eculizumab.
33.**(A).** Nephrotic syndrome--- penicillamine while interstitial nephritis--- penicillin
34.**(E).** Less-common causes of cortical necrosis include malaria, extensive burns, snakebites, infectious endocarditis, and medications (e.g., nonsteroidal anti-inflammatory agents). Acute renal cortical necrosis has also been reported to occur in systemic lupus erythematosis–associated antiphospholipid antibody syndrome.
35.**(A).** These include hemolytic uremic syndrome, hydronephrosis, polycystic kidney disease, Wilms tumor, and intrarenall abscess or hematoma. All patients should be evaluated for congenital and acquired hypercoagulable states.
36.**(B).** Hypercalciuria can accompany conditions resulting in hypercalcemia, such as hyperparathyroidism, vitamin D intoxication, immobilization, and sarcoidosis. Hypercalciuria may be associated with Cushing syndrome, corticosteroid therapy, tubular dysfunction secondary to Fanconi syndrome (Wilson disease, oculocerebrorenal syndrome), Williams syndrome, distal renal tubular acidosis, or

Bartter syndrome. Oral thiazide diuretics can normalize urinary calcium excretion by stimulating calcium reabsorption in the proximal and distal tubules.

37.**(C).** Polyuria caused by a urinary concentrating defect, renal tubular acidosis, and proteinuria associated with the glomerular lesions. Approximately 20-30% of patients with sickle cell disease develop proteinuria, Nephrotic-range proteinuria with or without clinically apparent nephrotic syndrome occurs in up to 30% of patients with SSN, and when present generally heralds progressive renal failure.

38.**(E).** Mitral valve prolapse is seen in approximately 12% of children; aortic and coronary artery aneurysms and aortic valve insufficiency are noted in affected adults. It is a systemic disorder with possible cyst formation in multiple organs (liver, pancreas, spleen, brain) and the development of saccular cerebral aneurysms.

39.**(C).** The hemorrhagic cystitis can occur in response to chemical toxins (cyclophosphamide, penicillin's, busulfan, thiotepa, dyes, insecticides), viruses (adenovirus types 11 and 21 and influenza A), radiation, and amyloidosis. The polyoma BK virus, present latently in immunocompetent hosts, is associated with the development of drug-induced cystitis in immunosuppressed patients.

40.**(A).**

41.**(A).** Findings on urine culture, intravenous pyelography, voiding cystourethrography, and cystoscopy are normal in most patients, hematuria generally resolves within 48 hr. after cessation of exercise, exercise hematuria is less common in females and can be associated with dysuria.

42.**(B).** Dilute urine or a large volume of urine output or in disease states in which the predominant urinary protein is not albumin cause false-negative test results.

43.**(E).**

44.**(C).** Defined contributing factors include a temperature >38.3°C (101°F), exercise, dehydration, cold exposure, heart failure, seizures, or stress.

45.**(C).** The absence of proteinuria (dipstick negative or trace for protein; and a normal ratio of urinary protein [mg/dL] to urinary creatinine [mg/dL]= [uPr/uCr] <0.2) on the first morning urine sample for 3 consecutive days confirms the diagnosis of orthostatic proteinuria, children with this condition are usually asymptomatic; hematuria, hypertension, hypoalbuminemia, edema, and renal dysfunction are absent, the cause of orthostatic proteinuria is unknown, although altered renal hemodynamics and partial left renal vein obstruction in the upright, lordotic position have been proposed as possible causes.

46.**(A).** Infections causes secondary nephrotic syndrome is : Endocarditis, Hepatitis B, C,HIV-1, infectious mononucleosis, malaria, syphilis (congenital and secondary), toxoplasmosis, schistosomiasis, filariasis.

47.**(E).**

48.**(C).** Vascular stasis from hemoconcentration,intravascular volume depletion , increased platelet number and aggregability, increase in hepatic production of fibrinogen,and low level of antithrombin III, cause hypercoagulable state.

49.**(A).** A spot urine protein : creatinine ratio should be >2.0, serum complement levels are normal, a renal biopsy is not routinely performed if the patient fits the standard clinical picture of MCNS, and the urinalysis reveals 3+ or 4+ proteinuria.
50.**(E).** Symptomatic volume overload, hypertension, heart failure, and pulmonary edema, is a potential complication of parenteral albumin therapy, particularly when administered as rapid infusions.
51.**(C).** Steroid-resistant nephrotic syndrome is usually caused by focal segmental glomerulosclerosis (80%), minimal change nephrotic syndrome, or membranoproliferativeglomerulonephritis.
52.**(D).** Following close contact with varicella infection, give immune compromised children on immunosuppressive agents varicella-zoster immune globulin if available.
53.**(D).** To minimize the psychologic effects of the condition and its therapy, children with idiopathic nephrotic syndrome should not be considered chronically ill and should participate in all age-appropriate childhood activities.
54.**(B).** Congenital nephrotic syndrome may be classified as primary or as secondary to a number of etiologies such as in utero infections (cytomegalovirus, toxoplasmosis, syphilis, hepatitis B and C, HIV).
55.**(E).** Renal transplantation is the definitive treatment of congenital nephrotic syndrome, though recurrence of the nephrotic syndrome has been reported to occur after transplantation.
56.**(A).** Hyperkalemia RTA---- Trimethoprim/sulfamethoxazole.
57.**(D).** Ocular presentations include photophobia, retinopathy, and impaired visual acuity. Patients also can develop hepatosplenomegaly, and delayed sexual maturation.
58.**(D).** Cysteamine, which binds to cystine and converts it to cysteine. Oral cysteamine does not achieve adequate levels in ocular tissues, so additional therapy with cysteamine eye drops is required. Patients with growth failure that does not improve with cysteamine might benefit from treatment with growth hormone. Kidney transplantation is a viable option.
59. **(A).**The urine pH is acidic (<5.5) because distal acidification mechanisms are intact in these patients.
60.**(E).** Hypercalciuria, hypocitraturia, and sensorineural deafness are seen in distal RTA while phosphate and massive bicarbonate wasting are characteristic of proximal RTA.
61.**(B).** Medullary sponge kidney is characterized by cystic dilation of the terminal portions of the collecting ducts as they enter the renal pyramids, Ultrasonographically, patients often have medullary nephrocalcinosis, complications include nephrolithiasis, pyelonephritis, hyposthenuria (inability to concentrate urine), and distal RTA.
62.**(B).** Type IV RTA occurs as the result of impaired aldosterone production (hypoaldosteronism) or impaired renal responsiveness to aldosterone (pseudohypoaldosteronism), proximal RTA pathogenesis is massive bicarbonate wasting. Acidosis results because aldosterone has a direct effect on the H+/ATPase responsible for hydrogen secretion. In addition, aldosterone is a potent stimulant for potassium secretion in the collecting tubule; consequently, lack of aldosterone results

in hyperkalemia. This further affects acid–base status by inhibiting ammoniagenesis and, thus, H+ excretion.

63.**(E).** Urinary indices in patients with Fanconi syndrome demonstrate varying degrees of aminoaciduria, and elevated urinary sodium or potassium; while in type IV RTA elevated urinary sodium levels with inappropriately low urinary potassium levels reflect the absence of aldosterone effect.

64.**(B).** The most common pattern of inheritance in congenital NDI is an X-linked recessive disorder, mutations in the AQP2 gene have been identified in patients with the rarer autosomal dominant and recessive forms, Irritability and crying are common features, patients with the secondary form generally present later in life, primarily with hypernatremia and polyuria.

65.**(B).**

66.**(E).** Blood pressure is usually normal. Patients with the antenatal form can have severe salt wasting, resulting in dehydration and hypotension.

67.**(B).** Urinary calcium levels are typically elevated, as are urinary potassium and sodium levels, nephrocalcinosis resulting from Hypercalciuria may be seen on ultrasound examination. Serum renin, aldosterone, and prostaglandin E levels are often markedly elevated; hypomagnesaemia is seen in a minority of patients but is more common in Gitelman syndrome. Renal biopsy is rarely performed to diagnose this condition.

68.**(E).**

69.**(B).** The urinary calcium level is usually very low (in contrast to the elevated urinary calcium level often seen in Bartter syndrome), hypokalemia, aldosterone levels usually normal, prostaglandin E secretion is not elevated.

70.**(A).** Patients with JN typically present with polyuria, anemia that is seemingly disproportionate to the degree of renal insufficiency, JN often have characteristic small cysts in the corticomedullary region.

71.**(D).** Patients whose urine shows an elevated specific gravity (>1.020), elevated urine osmolality (UOsm>500 mOsm/kg), low urine sodium (UNa< 20 mEq/L), and fractional excretion of sodium <1% (<2.5% in neonates) most likely have prerenal AKI. Those with a specific gravity of <1.010, low urine osmolality (UOsm< 350 mOsm/kg), high urine sodium (UNa> 40 mEq/L), and fractional excretion of sodium >2% (>10% in neonates), red blood cell casts most likely have intrinsic AKI and low urine osmolality (UOsm< 350 mOsm/kg) in Post renal AKI.

72.**(E).** Mannitol may be effective in prevention of pigment (myoglobin, hemoglobin) induced renal failure.

73.**(B).** Calcium gluconate counteracts the potassium-induced increase in myocardial irritability but does not lower the serum potassium level.

74.**(B).** Hypocalcemia is primarily treated by lowering the serum phosphorus level,phosphate binders should be orally administered to bind any ingested phosphate and increase GI phosphate excretion. Calcium should not be given i.v except in cases of tetany to avoid deposition of calcium salts into tissues.

75.**(B).** Persistent hyperkalemia.
76.**(D).** Intermittent hemodialysis is useful in patients with relatively stable hemodynamic status, while continuous renal replacement therapy is useful in patients with unstable hemodynamic status, concomitant sepsis, or multiorgan failure in the intensive care setting, hyperosmolar dialysate is infused into the peritoneal cavity via a surgically or percutaneously placed peritoneal dialysis catheter, urea and creatinine clearance more with intermittent hemodialysis than peritoneal dialysis.
77.**(D).** After 5 yr of age, acquired diseases (various forms of glomerulonephritis including lupus nephritis) and inherited disorders (familial juvenile nephronophthisis, Alport syndrome) predominate.
78.**(B).** Hyperkalemia is the result of CKD not a cause.
79.**(C).** The ultimate goal for children with ESRD is successful kidney transplantation. It is recommended that plans for renal replacement therapy be initiated when a child reaches stage 4 CKD.Hemodialysisis performed 3 times weekly. Peritoneal dialysis use cycler-driven therapy reduction in the number of dialysis catheter connections and disconnections (which decreases the risk of peritonitis).
80.**(D).** Optimal outcomes result when the child weighs ≥10 kg.
81.**(C).**
82.**(A).** Owing to the high risk of developing Wilms tumor, patients with Denys-Drash syndrome should undergo bilateral nephrectomy before transplantation.
83.**(C).**
84.**(A).**
85.**(D).** Infections need to be identified and treated before renal transplantation are; Hepatitis B and Hepatitis C
86.**(B).**
87.**(A).** Central to many current pediatric immunosuppressive regimens is a calcineurin inhibitor (cyclosporine or tacrolimus) in combination with steroids and an adjunctive anti proliferative agent (azathioprine, sirolimus, or MMF), other for induction therapies.
88.**(C).** Gastrointestinal and hematologic side effects occur in mycophenolate mofetil, but not in cyclosporine.
89.**(D).**
90.**(B).** That is why reducing immunosuppression is the main form of therapy, and cidofovir and leflunomide are used as adjunctive therapies.
91.**(E).** Schwartz formula for estimated GFR = 0.43 × height in cm/ serum creatinine in mg/Dl.